WHAT IS CLAIMED IS:

1.   An image processing method for density correction of a digital image by converting input analog image signals into digital image signals, generating a pixel density histogram from the digital image and making density correction of the digital image based on the generated density histogram, wherein, for the density histogram, the first threshold representing the threshold density value for the background, the second threshold representing the minimum frequency for the background density value, the third threshold representing the threshold density value for the maximum density and the fourth threshold representing the minimum frequency for the maximum density have been set beforehand, the image processing method comprising the steps of:

from the total density range of the density histogram,

defining as the background density determination area the range having the density values determined based on the first threshold and having a frequency equal to or greater than the second threshold and defining as the maximum density determination area the range having the density values determined based on the third threshold and having a frequency equal to or greater than the fourth threshold;

determining as the background density a density class which is closest to the first threshold, of all the density classes which belong to the background density determination

area;

determining as the maximum density a density class which is farthest from the third threshold, of all the density classes which belong to the maximum density determination

5   area; and

performing density correction based on the density classes of the background and the maximum density.

2.   The image processing method according to Claim 1,

10   wherein the frequencies in the background density determination area are sequentially compared with the second threshold, in the direction departing from the first threshold so as to determine the first density class having a frequency over the second threshold as the background

15   density.

3.   The image processing method according to Claim 1, wherein the frequencies in the maximum density determination area are sequentially compared with the fourth threshold,

20   in the direction approaching the third threshold so as to determine the first density class having a frequency over the fourth threshold as the maximum density.

4.   The image processing method according to Claim 1,

25   further comprising the steps of:

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setting the density class which has been determined as the background density from the background density determination area, as the first reference value and adding a previously designated first correction value to the first

5   reference value to produce a first corrected reference value;

setting the density class which has been determined as the maximum density from the maximum density determination area, as the second reference value and adding a previously designated second correction value to the second reference

10   value to produce a second corrected reference value;

generating a density correction curve starting from the first corrected reference value and ending at the second corrected reference value; and

performing density correction based on the density

15   correction curve.

5.   The image processing method according to Claim 4, wherein the first and second correction values can be adjusted arbitrarily.

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6.   An image processing apparatus comprising:

a histogram generator which converts input analog image signals into digital image signals and generates a density histogram from the density of all the pixels in the digital

25   image;

a density correcting portion for making density correction of the digital image based on the histogram generated by the histogram generator; and

a density class extracting portion for extracting the density classes corresponding to the background and the maximum density from all the density classes in the density histogram generated by the generator,

the histogram generator further comprising:

a density area divider for dividing the total density area of pixels of the digital image into multiple number of density classes; and

a density area generator, counting the frequencies of the density classes divided by the density area divider, defining as a background density determination area the range having the density values determined based on the first threshold and having a frequency equal to or greater than the second threshold and defining as a maximum density determination area the range having the density values determined based on the third threshold and having a frequency equal to or greater than the fourth threshold, in the total density range of the density histogram, based on the first threshold representing the threshold density value for the background, the second threshold representing the minimum frequency for the background density value, the third threshold representing the threshold density value for the

maximum density and the fourth threshold representing the minimum frequency for the maximum density, all having been set beforehand,

wherein the density class extracting portion determines as the background density a density class which is closest to the first threshold, of all the density classes which belong to the background density determination area and determines as the maximum density a density class which is farthest from the third threshold, of all the density classes which belong to the maximum density determination area.

7. The image processing apparatus according to Claim 6, wherein the density class extracting portion sequentially compares the frequencies in the background density determination area with the second threshold, in the direction departing from the first threshold so as to determine the first density class having a frequency over the second threshold as the background density.

8. The image processing apparatus according to Claim 6, wherein the density class extracting portion sequentially compares the frequencies in the maximum density determination area with the fourth threshold, in the direction approaching the third threshold so as to determine the first density class having a frequency over the fourth

threshold as the maximum density.

9.   The image processing apparatus according to Claim 6,

wherein the density correcting portion sets the density class

5   which has been determined as the background density from the

background density determination area, as the first

reference value and adding a previously designated first

correction value to the first reference value to produce a

first corrected reference value, sets the density class which

10   has been determined as the maximum density from the maximum

density determination area, as the second reference value

and adding a previously designated second correction value

to the second reference value to produce a second corrected

reference value, generates a density correction curve

15   starting from the first corrected reference value and ending

at the second corrected reference value, and performs density

correction based on the density correction curve.

10.   The image processing apparatus according to Claim 9,

20   further comprising a correction value setting portion for

allowing the first and second correction values to be adjusted

arbitrarily.